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[Patent Intranet](#) > [Classification Home Page](#) > [Classification Search Page](#) >

[Classification Schedule](#)

[Site Feedback](#)

[Search Classification Data](#) | [Class Numbers & Titles](#) | [Class Numbers](#) | [USPC Index](#) | [International](#) | [HELP](#) | [Employee by Name](#) | [Employees by Org](#)

[<-Previous Page](#)

## **Class 381 ELECTRICAL AUDIO SIGNAL PROCESSING SYSTEMS AND DEVICES**

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- 1** **BINAURAL AND STEREOPHONIC**
- 2 . Broadcast or multiplex stereo
- 3 .. FM final modulation
- 4 ... AM subcarrier
- 5 .... Four discrete channels
- 6 ..... Having transmitter
- 7 .... Switch-type detector or modulator
- 8 ..... Two diodes
- 9 ..... Four or more diodes
- 10 .... Channel separation control
- 11 .... Automatic switchover between mono and stereo modes
- 12 .... Stereo indicators (e.g., stereo presence)
- 13 .... Antinoise
- 14 .... Having transmitter
- 15 .. AM or both AM and angle final modulation
- 16 ... Having transmitter
- 17 . Pseudo stereophonic
- 18 .. Pseudo quadrasonic
- 19 . Quadrasonic
- 20 .. Matrix
- 21 ... 4-2-4
- 22 .... Variable decoder
- 23 .... With encoder
- 23.1 . Hearing aid
- 300 . Stereo speaker arrangement
- 301 .. In furniture or clothing
- 302 .. In vehicle
- 303 .. Optimization
- 304 ... Enclosure orientation
- 305 ... Enclosure adaptation
- 306 .. With image presentation means
- 307 .. Surround (i.e., front plus rear or side)
- 308 .. In single baffle
- 309 .. Stereo earphone
- 310 ... Virtual positioning
- 311 ... Wireless or for use in diverse
- 26 . Stereo sound pickup device (microphone)
- 27 . Center channel
- 28 . Amplifier
- 54** **HELIUM SPEECH**
- 55** **AUDIO TRANSDUCER PROTECTION CIRCUITRY**
- 56** **MONITORING OF SOUND**
- 57 . Amplification control responsive to ambient sound
- 58** **MONITORING/MEASURING OF AUDIO DEVICES**
- 59 . Loudspeaker operation
- 60 . Testing of hearing aids

<b><u>61</u></b>	<b>SOUND EFFECTS</b>
<u>62</u>	. Tremelo or vibrato effects
<u>63</u>	. Reverberators
<u>64</u>	.. Mechanical (e.g., reverberation chamber)
<u>65</u>	... Helical spring
<b><u>66</u></b>	<b>DEREVERBERATORS</b>
<b><u>67</u></b>	<b>STETHOSCOPES, ELECTRICAL</b>
<b><u>312</u></b>	<b>HEARING AIDS, ELECTRICAL</b>
<u>313</u>	. Directional
<u>314</u>	. Programming interface circuitry
<u>315</u>	. Remote control, wireless, or alarm
<u>316</u>	. Frequency transposition
<u>317</u>	. Noise compensation circuit
<u>318</u>	.. Feedback suppression
<u>319</u>	. With vacuum tube amplifier
<u>320</u>	. Spectral control
<u>321</u>	. Wideband gain control
<u>322</u>	. Specified casing or housing
<u>323</u>	.. Power supply or programming interface terminals
<u>324</u>	.. Component mounting
<u>325</u>	.. Cerumen protection
<u>326</u>	.. Non-air-conducted sound delivery
<u>327</u>	.. Spectacle
<u>328</u>	.. Ear insert
<u>329</u>	... Device for manipulation
<u>330</u>	.. Hook over ear
<u>331</u>	.. Inductive pickup
<b><u>70</u></b>	<b>ARTIFICIAL LARYNX, ELECTRICAL</b>
<b><u>71.1</u></b>	<b>ACOUSTICAL NOISE OR SOUND CANCELLATION</b>
<u>71.2</u>	. Acoustic, nonairborne vibration sensing or counterwave emission
<u>71.3</u>	. From appliance
<u>71.4</u>	. Within cabin or compartment of vehicle
<u>71.5</u>	. Within duct
<u>71.6</u>	. Adjacent ear
<u>71.7</u>	. Particular transducer or enclosure structure
<u>71.8</u>	. Counterwave generation control path
<u>71.9</u>	.. Nonacoustically derived reference signal
<u>71.11</u>	.. Adaptive filter topology
<u>71.12</u>	.. Algorithm or formula (e.g., LMS, Filtered-X, etc.)
<u>71.13</u>	.. Analog or nonadaptive
<u>71.14</u>	.. Tonal noise or particular frequency or band
<b><u>72</u></b>	<b>HEARING PROTECTORS, ELECTRICAL</b>
<b><u>73.1</u></b>	<b>SOUND OR NOISE MASKING</b>
<b><u>74</u></b>	<b>HEADPHONE CIRCUITS</b>
<b><u>75</u></b>	<b>MEGAPHONES</b>
<b><u>76</u></b>	<b>LECTERNS</b>
<b><u>77</u></b>	<b>ONE-WAY AUDIO SIGNAL PROGRAM DISTRIBUTION</b>
<u>78</u>	. Drive-in
<u>79</u>	. Near field
<u>80</u>	. Multiple channel
<u>81</u>	.. With switching
<u>82</u>	. Public address system
<u>83</u>	.. Feedback suppression

<u>84</u>	.. Spare amplifier substitution
<u>85</u>	.. Speaker or channel switching
<u>86</u>	<b>VEHICLE</b>
<u>87</u>	<b>HAVING NON-ELECTRICAL FEATURE (E.G., MOUNTING)</b>
<u>89</u>	. Loudspeakers driven in given phase relationship
<u>332</u>	. And loudspeaker
<u>333</u>	.. With furniture, clothing, or image presentation means
<u>334</u>	.. Portable or for use in diverse environment
<u>335</u>	.. Plural diaphragms, compartments, or housings
<u>336</u>	.. Curved or angled housing
<u>91</u>	. Having microphone
<u>92</u>	<b>DIRECTIVE CIRCUITS FOR MICROPHONES</b>
<u>93</u>	<b>FEEDBACK SUPPRESSION</b>
<u>94.1</u>	<b>NOISE OR DISTORTION SUPPRESSION</b>
<u>94.2</u>	. Spectral adjustment
<u>94.3</u>	.. In multiple frequency bands
<u>94.4</u>	. Interpolation
<u>94.5</u>	. Soft switching, muting, or noise gating
<u>94.6</u>	. Hum or ground loop
<u>94.7</u>	. Using signal channel and noise channel
<u>94.8</u>	. Peak limiting or pulsive noise compensation
<u>94.9</u>	. Feedforward circuitry for transducer compensation
<u>95</u>	<b>MICROPHONE FEEDBACK</b>
<u>96</u>	<b>LOUDSPEAKER FEEDBACK</b>
<u>97</u>	<b>INCLUDING PHASE CONTROL</b>
<u>98</u>	<b>INCLUDING FREQUENCY CONTROL</b>
<u>99</u>	. Having crossover filter
<u>100</u>	.. With active device
<u>101</u>	. Automatic tone control
<u>102</u>	.. With amplitude control
<u>103</u>	. Having automatic equalizer circuit
<u>104</u>	<b>INCLUDING AMPLITUDE OR VOLUME CONTROL</b>
<u>105</u>	. Remote
<u>106</u>	. With amplitude compression/expansion
<u>107</u>	. Automatic
<u>108</u>	.. Including feedback
<u>109</u>	. With manual volume control
<u>110</u>	<b>VOICE CONTROLLED</b>
<u>111</u>	<b>CIRCUITRY COMBINED WITH SPECIFIC TYPE MICROPHONE OR LOUDSPEAKER</b>
<u>112</u>	. With carbon microphone
<u>113</u>	. With electrostatic microphone
<u>114</u>	. With piezoelectric microphone
<u>115</u>	. With magnetic microphone
<u>116</u>	. With electrostatic loudspeaker
<u>117</u>	. With magnetic loudspeaker
<u>118</u>	<b>WITH MUSICAL INSTRUMENT</b>
<u>119</u>	<b>WITH MIXER</b>
<u>120</u>	<b>WITH AMPLIFIER</b>
<u>121</u>	. Feedback
<u>122</u>	<b>HAVING MICROPHONE</b>
<u>123</u>	<b>SWITCHING</b>
<u>150</u>	<b>ELECTRO-ACOUSTIC AUDIO TRANSDUCER</b>
<u>151</u>	. Body contact wave transfer (e.g., bone conduction earphone, larynx microphone)
<u>152</u>	. Driven diverse static structure (e.g., wall, sounding board)
<u>337</u>	. Having acoustic wave modifying structure
<u>338</u>	.. With tubular waveguide or resonant element

<u>339</u>	.. Sound intensifying or spreading element
<u>340</u>	... Horn
<u>341</u>	.... Inverted, folded, or curled
<u>342</u>	.... Plural horns or diaphragms
<u>343</u>	.... Phase plug
<u>344</u>	... Mouthpiece
<u>345</u>	.. Acoustic enclosure
<u>346</u>	... Acoustic resistance
<u>347</u>	.... On front side of diaphragm
<u>348</u>	.... On rear side of diaphragm
<u>349</u>	... Bass reflex (e.g., rear wave)
<u>350</u>	... Front wave
<u>351</u>	... Plural chambers
<u>352</u>	... Having internal wave reflecting means
<u>353</u>	... Acoustic damping or attenuating resonator
<u>354</u>	.. Absorbing or attenuating element
<u>160</u>	.. Reflecting element
<u>161</u>	. With mechanical amplifier arrangement
<u>162</u>	. Detail of mechanical vibration coupling to transducer (e.g., tuned vibrating element)
<u>163</u>	. Having bi-directional transducer
<u>164</u>	. Thermal response to, or generation of, sound vibration
<u>165</u>	. By modifying fluid flow
<u>166</u>	. Having a fluid as a conducting element
<u>167</u>	.. Ionized gap, spark, or flame
<u>355</u>	. Housed microphone
<u>356</u>	.. Directional
<u>357</u>	... With plural sound ports (e.g., pressure gradient)
<u>358</u>	.... Plural or variable characteristics
<u>359</u>	.. Windscreen
<u>360</u>	.. Cavity
<u>361</u>	.. Mounting or support
<u>362</u>	... Boom (other than on headset)
<u>363</u>	... Stand or gooseneck
<u>364</u>	... On body or clothing
<u>365</u>	... In electronic apparatus or vehicle
<u>366</u>	... Detachable from support
<u>367</u>	... In headgear
<u>368</u>	... On shock absorbing support
<u>369</u>	. Microphone capsule only
<u>170</u>	.. Compound
<u>171</u>	.. Micromagnetic
<u>172</u>	.. Light modifying
<u>173</u>	.. Piezoelectric or ferroelectric
<u>174</u>	.. Capacitive
<u>175</u>	.. Semiconductor junction microphone
<u>176</u>	.. Conductive diaphragm (e.g., reed, ribbon)
<u>177</u>	.. Dynamic (e.g., magnetic)
<u>178</u>	.. Vibrating electrical contract
<u>179</u>	.. Resistive
<u>180</u>	... Granular or carbon
<u>181</u>	.... Differential
<u>182</u>	. Plural or compound reproducers
<u>370</u>	.. Headphone
<u>371</u>	... Particular cup
<u>372</u>	.... Having mechanical or acoustic sound attenuation
<u>373</u>	.... Openable to ambient
<u>374</u>	... Particular support structure

<u>375</u>	.... And microphone
<u>376</u>	.... Headgear
<u>377</u>	.... Plural bands
<u>378</u>	.... Single band
<u>379</u>	.... adjustable
<u>380</u>	.... Ear insert or bone conduction
<u>381</u>	.... Hook over ear or spectacle
<u>382</u>	.... Sound conducting tube
<u>383</u>	.... Collapsible
<u>384</u>	... Electrical hardware feature
<u>184</u>	.. Different types of diaphragms
<u>185</u>	.. Having common voice coil
<u>186</u>	.. Plural diaphragms
<u>385</u>	. Having body supported structure other than on head
<u>386</u>	. Mounting or support feature of housed loudspeaker
<u>387</u>	.. Directional, directible, or movable
<u>388</u>	.. With furniture, clothing, or image display
<u>389</u>	.. In vehicle
<u>390</u>	.. Boom or support arm
<u>391</u>	.. Grille
<u>392</u>	.. Resilient
<u>393</u>	.. electrical insulation feature
<u>394</u>	.. Electrical hardware
<u>395</u>	.. Mechanical detail
<u>189</u>	. Having protective or sheilding feature
<u>190</u>	. Electrostrictive, magnetostrictive, or piezoelectric
<u>191</u>	. Having electrostatic element (e.g., electret, vibrating plate)
<u>396</u>	. Electromagnetic (e.g., dyynamic)
<u>397</u>	.. Cooling feature
<u>398</u>	.. Having diaphragm support feature
<u>399</u>	.. Conductive diaphragm (e.g., ribbon)
<u>400</u>	.. Movable voice coil
<u>401</u>	... Multiple voice coils
<u>402</u>	.... For different frequencies
<u>403</u>	... Centering from outside bobbin or diaphragm
<u>404</u>	.... Spider
<u>405</u>	... Centering from within bobbin or diaphragm
<u>406</u>	... Field coil
<u>407</u>	... Particular bobbin structure
<u>408</u>	... Pattern
<u>409</u>	... Wiring structure
<u>410</u>	... Coil coating, winding layer structure, or wire
<u>411</u>	.. Including adjustment mechanism
<u>412</u>	.. Magnetic circuit
<u>413</u>	... Having damping
<u>414</u>	... Flux modifying means
<u>415</u>	... Magnetic liquid
<u>416</u>	... Inverted (e.g., within cone)
<u>417</u>	... Armature diaphragm
<u>418</u>	... Armature linked to diaphragm
<u>419</u>	... Not having central magnetic portion
<u>420</u>	... Having central magnetic portion
<u>421</u>	.... Plural magnets
<u>422</u>	..... Like poles adjacent
<u>423</u>	.. Specified diaphragm shape or structure
<u>424</u>	... Plural portions or sections
<u>425</u>	.... Honeycomb

<u>426</u>	... Critically defined material or lamination
<u>427</u>	.... Metal
<u>428</u>	.... Fibrous
<u>429</u>	... Apertures in surface
<u>430</u>	... Dome or round
<u>431</u>	... Flat
<u>432</u>	... Conical
<u>433</u>	.. Basket detail
<b><u>124</u></b>	<b>MISCELLANEOUS</b>

## FOREIGN ART COLLECTIONS

**FOR000 CLASS-RELATED FOREIGN DOCUMENTS**

Any foreign patents or non-patent literature from subclasses that have been reclassified have been transferred directly to FOR Collections listed below. These Collections contain ONLY foreign patents or non-patent literature. The parenthetical references in the Collection titles refer to the abolished subclasses from which these Collections were derived.

**FOR100 AUDIO BANDWIDTH COMPRESSION OR EXPANSION (381/29)**FOR101 . With content reduction encoding (381/30)FOR102 . Delay line (381/33)**FOR103 TIME COMPRESSION OR EXPANSION (E.G., RUN LENGTH CODING) (381/34)**FOR104 . With content reduction encoding (381/35)**FOR105 SPEECH ANALYSIS AND SYNTHESIS COMBINED (381/36)**FOR106 . Using frequency (381/37)FOR107 .. Pitch (381/38)FOR108 .. Formants (381/39)FOR109 . Using time (381/40)**FOR110 SPEECH ANALYSIS (E.G., PHONEME RECOGNITION) (381/41)**FOR111 . Voice recognition (381/42)FOR112 . Word recognition (381/43)FOR113 .. Phonetic typewriters (381/44)FOR114 .. Frequency domain (381/45)FOR115 . Detection of speech in noise (381/46)FOR116 . Signal to noise ratio enhancement (381/47)FOR117 . Speech parameter display (381/48)

- FOR118 . Speech pitch fundamental frequency (381/49)
- FOR119 . Speech formant frequencies (381/50)
- FOR120 **SPEECH SYNTHESIS (381/51)**
- FOR121 . Speech from printed matter (381/52)
- FOR122 . Vocal tract model (381/53)
- FOR123 **ACOUSTICAL NOISE OR SOUND CANCELLATION (381/71)**
- FOR124 **NOISE SUPPRESSION (381/94)**
- BINAURAL AND STEREOPHONIC**
- FOR125 . Speaker arrangement (381/24)
- FOR126 .. Earphone (381/25)
- FOR127 **HEARING AIDS, ELECTRICAL (381/68)**
- FOR128 . Directional (381/68.1)
- FOR129 . Frequency control (381/68.2)
- FOR130 . Bone conduction (381/68.3)
- FOR131 . Gain Control (381/68.3)
- FOR132 . Spectacle (381/68.5)
- FOR133 . Ear insert (381/68.6)
- FOR134 . Hook over ear (381/68.7)
- FOR135 . Specified casing or housing (381/69)
- FOR136 .. Having vacuum tube amplifier (381/69.1)
- FOR137 .. Having battery (381/69.2)
- FOR138 . Having enclosure or housing (381/138)
- FOR139 .. With loudspeaker (e.g., baffle, spatial orientation, etc.) (381/90)
- FOR140 . With acoustic wave modifying structure (381/153)
- FOR141 .. Including sound conducting tube (381/154)
- FOR142 .. Directional (381/155)
- FOR143 .. Sound intensifying or spreading element (381/156)
- FOR144 ... Mouthpiece (381/157)
- FOR145 .. Absorbing or attenuating element (e.g., baffle, obstruction, damping) (381/158)

- FOR146 .. Enclosure or resonant cavity (381/159)
  - FOR147 . Microphone (381/168)
  - FOR148 .. With mounting or support feature (381/169)
  - FOR149 .. Headphone (381/183)
  - FOR150 . Having body supported structure (e.g., earphone) (381/187)
  - FOR151 . With mounting or support feature (381/188)
  - FOR152 . Electromagnetic (e.g., dynamic) (381/192)
  - FOR153 .. Having feature of edge-supported diaphragm (381/193)
  - FOR154 .. Movable voice coil (381/194)
  - FOR155 ... Multiple (e.g., double) (381/195)
  - FOR156 ... Pattern (381/196)
  - FOR157 ... Centering (381/197)
  - FOR158 .. Including adjustment mechanism (381/198)
  - FOR159 .. Magnetic circuit or core structure (381/199)
  - FOR160 ... Armature (381/200)
  - FOR161 ... Magnetic configuration (e.g., tubular or U-shaped) (381/201)
  - FOR162 .. Specified diaphragm shape or structure (381/202)
  - FOR163 ... Flat (381/203)
  - FOR164 ... Conical (381/204)
  - FOR165 . Electro-acoustical transducer mounting or support (381/205)
- 

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[Intranet Home](#) | [Index](#) | [Resources](#) | [Contacts](#) | [Internet](#) | [Search](#) | [Firewall](#) | [Web Services](#)